

AN ANNOTATED LIST OF THE INSECTS, MOSTLY
COLEOPTERA, ASSOCIATED WITH JEFFREY
PINE IN LASSEN NATIONAL FOREST,
CALIFORNIA

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A complete study of the insect fauna of Jeffrey pine is a very desirable goal as it would not only add considerably to our knowledge of the life histories of these insects, but would also aid in insect control work in those localities of California where it is to be maintained for its valuable lumber or its æsthetic value.

It is the purpose of this paper to present additional observations on insects associated with Jeffrey pine. The data was recorded during the month of June 1935 near Camp No. 10, Lassen National Forest, California, at altitudes between 5,500-6,500 feet. A salvage operation in this area made the study possible.

In the following list the insects are arranged in groups according to the part of the tree attacked; the Coleoptera follow the systematic arrangement of Leng's Catalogue.

I wish to express my appreciation to Dr. Edwin C. Van Dyke for many suggestions during the preparation of this paper, and for checking the determinations of the Coleoptera. Dr. F. E. Blaisdell, Sr. kindly determined the species of *Corticeus*, and Professor E. O. Essig the Aphididæ.

PRIMARY INSECTS UNDER BARK OF MAIN TRUNK OR BRANCHES

Melanophila gentilis Lec. Main trunk, usually near base; maximum number of pupæ June 13; adults June 10-21; single generation a year, overwintering in pre-pupal state, pupating in spring; numerous; a "fill-in" species in this locality.

Melanophila californica Van Dyke. Upper trunk and larger branches; pre-pupal larvæ and pupæ June 12; adults June 13-21; life cycle as in *M. gentilis*; with *Ips oregoni* (Eich.) causing top killing.

Dendroctonus jeffreyi Hopk. Throughout main bole; in association usually with other bark-beetles, especially *Ips emarginatus* (Lec.); full-grown larvæ June 6; pupæ June 15; considerable overlapping of broods; numerous.

Dendroctonus valens Lec. Base of bole; full-grown larvæ and pupæ June 12; fairly abundant as a "fill-in" species.

- Ips emarginatus* (Lec.) Throughout main bole; maximum number of larvæ June 15 (1935 attack); very numerous; usually found associated with other bark-beetles, but "pure" attacks occur.
- Ips oregoni* (Eich.) Upper bole and larger branches; parent adults, eggs, and small larvæ June 15; pupæ June 20; very abundant and serious as a top killer in association with *Melanophila californica* Van Dyke.

SECONDARY INSECTS UNDER BARK OF MAIN TRUNK OR BRANCHES

- Chrysobothris caurina* Horn. Adults from reproduction; June 18; few.
- Chrysobothris purpurifrons* Mots. Adults from reproduction or attracted to slash; June 14; common.
- Chrysobothris dentipes* (Germ.) Main limbs and logs at landings; adults June 10-27; June 13, pupæ and new adults found in large limb; very numerous.
- Stephanopachys pacificus* Csy. Bark of dying trees; adults June 5; few.
- Rhagium lineatum* Oliv. Under bark, main trunk; adults June 10-17; common.
- Callidium cicatricosum* Mann. Main bole; adults June 4-19; rare.
- Pissodes yosemite* Hopk. Adults from reproduction; June 14; few.
- Gelus californicus* (Lec.) Under bark; adults June 6-14; very common.
- Hylurgops subcostulatus* Mann. Bases of recently killed trees; June 17, eggs found laid in masses in egg grooves arising from the sides of the longitudinal burrow; adults June 17-19; fairly common.
- Hylastes macer* Lec. Under bark, main trunk; adults June 12; few.
- Ips latidens* Lec. Smaller limbs, with *Ips oregoni* (Eich.); adults June 8-14; fairly common.
- Orthotomicus ornatus* Sw. Smaller limbs, usually associated with other engraving beetles; adults June 4; few.

IN WOOD OF TRUNK OR BRANCHES

- Chrysophana placida* (Lec.) Main bole; adult June 12; one specimen.
- Chalcophora angulicollis* (Lec.) Dying or dead trees; adults attracted to logs at landings; June 5-21; very common.
- Dicerca sexualis* Cr. Adults attracted to logs at landings; June 8-14; numerous.
- Dicerca tenebrosa* Lec. Adults attracted to logs at landings; June 10; few.
- Chrysobothris californica* Lec. One adult female taken attracted to felled log at landing; June 27.

- Asemum atrum* Esch. Adults resting on trunk; June 17; few.
Liasemum mokelumne Csy. Adults on bark of main trunk; June 8-21; commonest cerambycid on both ponderosa and Jeffrey pines.
Monochamus maculosus Hald. Adults resting on trunk; pupæ and first adults June 15; common.
Cossonus ponderosæ Van Dyke. Under bark, at base of dead tree; adults June 11; few.
Rhyncolus oregonensis Horn. Under bark, base of bole, dead tree; adults June 11; few.
Gnathotrichus retusus (Lec.) Sap-heartwood at base of bole, dying trees; adults in burrows June 6; common.
Xyleborus scopulorum Hopk. Base of dead trees; adults June 6; fairly common.

ATTACKING SMALLER LIMBS OR TWIGS

- Ernobius* sp. Adults beaten from staminate catkins; June 14; few.
Callidium hirtellum Lec. Dead limbs; June 10-14; common.
Pogonocherus propinquus Fall. Limbs; adults June 3; few.
Magdalis cuneiformis Horn. Foliage; adults June 14; common.
Magdalis lecontei Horn. Beaten from foliage; adults June 8-14; very common.
Cinara schwarzii (Wilson). Aphis infesting small lateral branches of reproduction; June 13 few winged forms, mostly apterous; June 19 many winged forms; another *Cinara* sp. found on ponderosa pine; common on cut-over areas.

DEFOLIATORS

- Dichelonyx crotchii* Horn. Foliage; adults June 12; common.
Dichelonyx vicina (Fall). Foliage; adults June 12-14; common.
Glyptoscelis sequoiæ Blais. Foliage; adults June 14; few.
Scythropus californicus Horn. Foliage; adults June 10-14; very common.
Diprion sp. Larvæ of this sawfly very commonly collected on needles of reproduction; larvæ during June.

FEEDING ON STAMINATE CATKINS

The following species were taken June 14 by beating the foliage and staminate catkins. They are not necessarily connected with this host, as some were attracted by the source of food.

- Listrus* sp. Common.
Asclera excavata Lec. Few.
Adelocera rorulenta Lec. One specimen.
Limonius nitidulus Horn. Very common.
Ludius triundulus tigrinus Fall. Very common.
Ludius æneipennis (Kby.). Common.

Ludius inflatus (Say.) Common.
Elater phænicopterus Germ. Common.
Elater bimaculatus Van Dyke. Few.
Eronyxa pilosulus (Cr.) Common.
Scymnus ardelio Horn. Few.
Hippodamia apicalis Csy. One specimen.
Adalia frigida (Schn.) One specimen.
Cleis picta (Rand.) Common.
Stenochidus cyanescens carbonarius Schffr. One specimen.
Platydemia oregonense Lec. One specimen.
Anoplodera chrysocoma (Kby.) Common.
Leptacmæops basalis (Lec.) Very common.
Rhinomacer comptus Lec. Common.

ASSOCIATED WITH POLYPORUS VOLVATUS

Epuræa monogama Cr. Adults of this nitidulid collected within the sporophores; several found together; common.

PREDACIOUS INSECTS

Nudobius pugetanus Csy. Burrows of bark-beetles; adults June 6-12; common.
Phlæonomus pusillus Grav. Burrows of bark-beetles; adults June 6-12; common.
Platysoma punctigerum Lec. Under bark, usually associated with bark-beetle galleries; adults June 4; fairly common.
Plegaderus nitidus Horn. Under bark; adults June 4; common.
Enoclerus spegeus (Fab.) Adults on bark; June 4-11; common.
Thanasimus lecontei (Wolc.) Adults on bark; June 11; not as common as on ponderosa pine.
Othnius lugubris Horn. Adults active on bark; June 6-8; common.
Temnochila virescens chlorodia (Mann.) Adults in crevices of bark; larvæ among frass of wood boring Coleoptera; larvæ and adults June 4; fairly common.
Tenebrioides sp. Under bark, dead trees; adults June 4; fairly common.
Ostoma oregonensis Schaef. Under bark, dead trees; June 10; few.
Lasconotus bitomoides Kraus. Burrows of *Ips oregoni* (Eich.); adults June 12; few.
Aulonium longum Lec. Burrows of *Dendroctonus* and *Ips* sp.; adults during June; common.
Deretaphrus oregonensis Horn. Crevices of bark or under bark, base of bole; June 11-12; fairly common.
Corticeus (*Hypophlæus*) *substriatus* (Lec.) Burrows of bark-beetles and other wood boring Coleoptera; dying or dead trees; adults June 4-5; numerous.
Bius estriatus Lec. Under bark; adults June 4; few.

GENERIC CHARACTERISTICS OF AONIDIELLA BERLESE
AND LEONARDI, AND A DESCRIPTION OF A NEW
SPECIES FROM AUSTRALIA (HOMOPTERA-
DIASPIDIDÆ)¹

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Aonidiella has for many years been accepted by the Italian coccidologists as a valid genus. In 1921 MacGillivray (3)² apparently concurred, although it was not until 1933 that Nel (5) stressed this point to the extent that the name was at least partially accepted by American entomologists. The genus is important because the California red scale, *Aonidiella aurantii* (Mask.) is the type species. As early as 1899 Cockerell (2) placed *Aonidiella* as a sub-genus of *Chrysomphalus*, although he gave no reason for this change. Since then economic workers have consistently placed *aurantii* in the genus *Chrysomphalus*.

Although there has been much argument about the genus *Aonidiella*, apparently no attempt has been made to define it. In the original description of this genus in 1895 by Berlese and Leonardi (1), mention was made of the kidney-shaped body. The almost circular enlargement and sclerotization of the body of the adult female at maturity does seem to be fairly characteristic. This character alone would tend to separate it from *Chrysomphalus* where the pygidium is never so strongly retracted into the body. The paraphyses of the *Aonidiella* species are, in all cases examined, very short, slender, and small as compared with the more pronounced type of paraphyses in *Chrysomphalus*. The absence of the perivulvar pores was considered of importance for many years, and, as a matter of fact, if the species lacked these structures, they were usually assigned to *Aonidiella*, regardless of any other character. However, in view of the fact that *Aonidiella comperei* McKenzie and the new species described in this report, as well as *Aonidiella orientalis* (Newstead), all possess perivulvar pores, very little importance can be given this structure as a generic character. The epiphysis or outgrowth upon the margin of the pygidium just beyond the

¹ Paper No. 371, University of California Graduate School of Tropical Agriculture and Citrus Experiment Station, Riverside, California.

² Numbers in parentheses indicate references at end of article.